17792

RECEIVED
SEP 1 1973

Network Working Group
Request for Comments: # 546
NIC: # 17792

Bob Thomas
BBN-TENEX
August 10, 1973

TENEX Load Averages for July 1973

This RFC presents utilization data for the BBN and ISI TENEX systems which may be of interest to the network community.

The graph on page 4 summarizes the load at the BBN-TENEX and USC-ISI Hosts during the work week for the month of July 1973. The weekday hourly load average* for each site is plotted versus the time of day; the time of day is Eastern Daylight Time.

Interpreting data such as this is tricky business. However, it is difficult to resist making the following observations:

1. The shapes of the BBN and ISI curves are approximately the same; furthermore, there is no skew between the curves. This suggests that the user populations for the two systems have similar working habits and are

- - - - - - - - - - - -

* The TENEX load average is a measure of CPU demand. The load average is an average of the number of runable processes over a given time period. For example, an hourly load average of 10 would mean that (for a single CPU system) at any time during that hour one could expect to see 1 process running and 9 others ready to run (i.e., not blocked for I/O) waiting for the CPU.

acclimated to the same time zone.

2. The significant features of both curves appear to be strongly correlated with "normal events" in the day of a user living on East Coast time, suggesting that the load at both sites is influenced most strongly by such users:

   a. the load begins to increase between 7-8 a.m. EDT as users begin their daily computing;

   b. it dips between 10-11 a.m. EDT (smoothed to a smaller rate of increase in the ISI curve) as users take their coffee break;

   c. the load peaks sharply between 1-2 p.m. EDT as users return from lunch to resume their computing;

   d. it decreases as the afternoon continues and as users go home from work;

   e. it reaches a local minimum between 6-7 p.m. EDT (minimum not present in ISI curve) when most people eat dinner;

   f. it increases to an evening peak between 9-10 p.m. EDT as some users come back from dinner and after dinner activities to resume their computing.

3. The curve for ISI is smoother than the one for BBN: the "coffee break" dip appears only as a decrease in slope; the dinner break and evening peak are completely smoothed out. This smoothing is probably due to the influence of the West Coast users of the ISI machine.

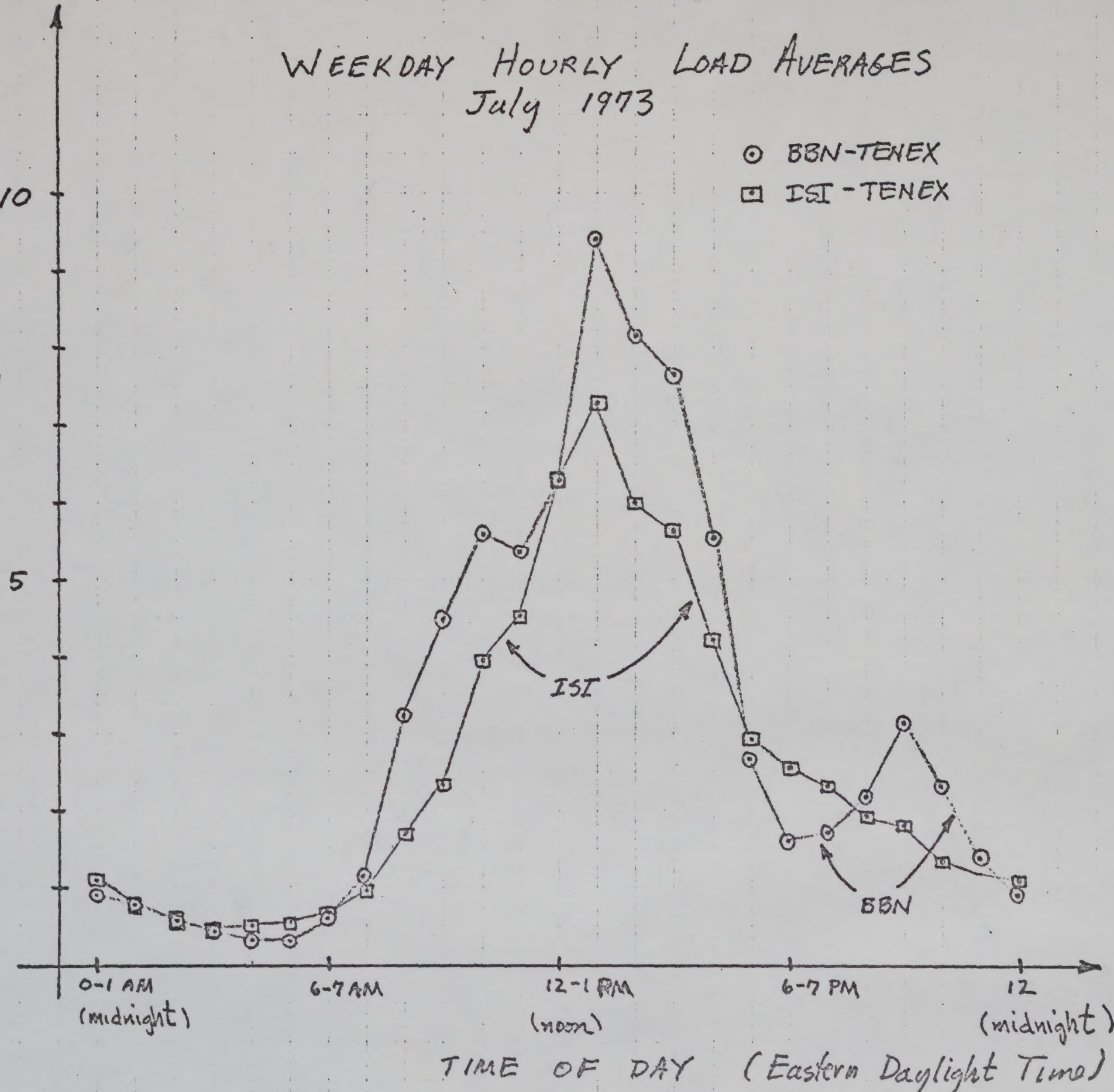
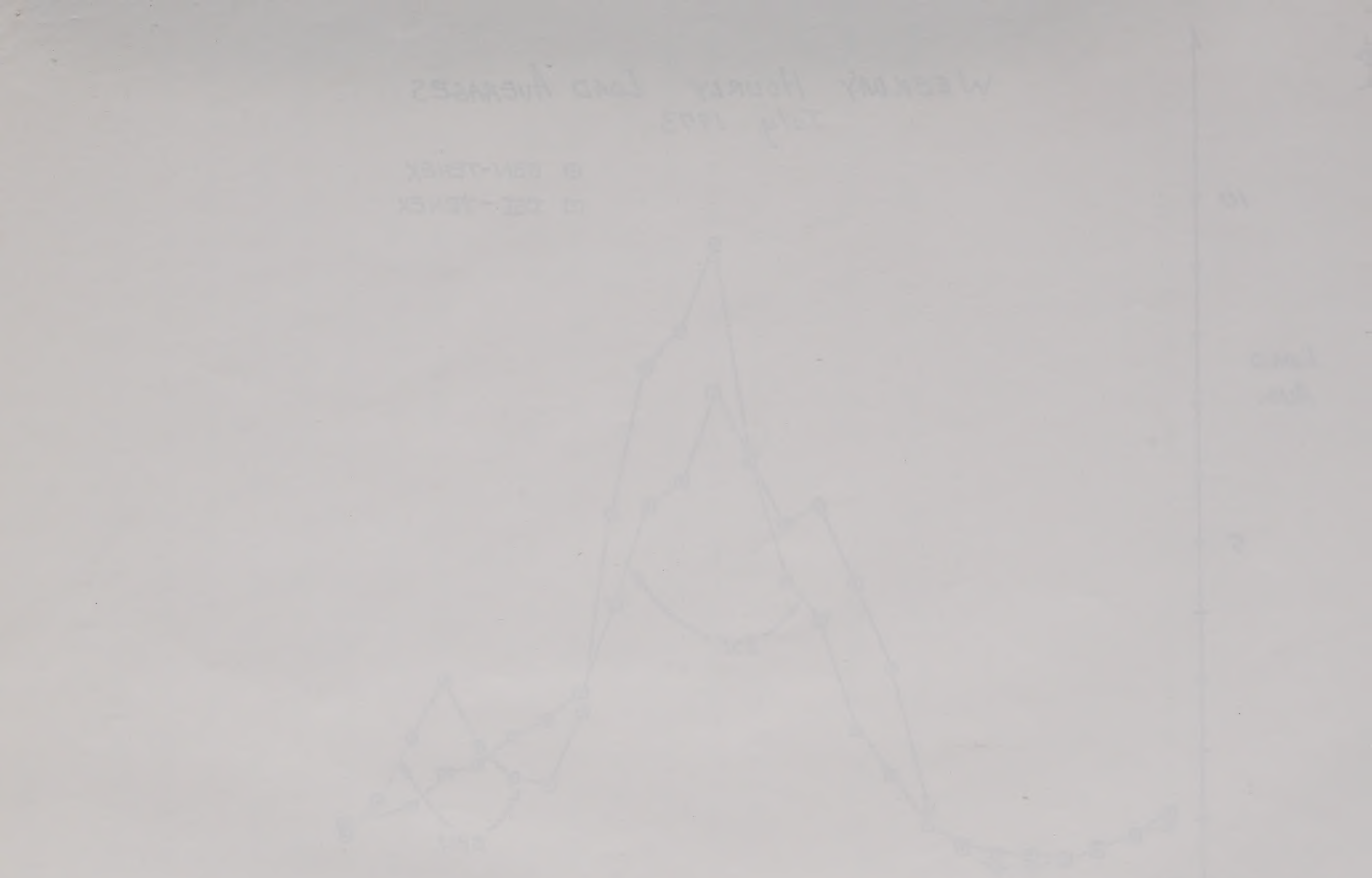
4. During July the BBN system was more heavily loaded than the ISI system. Since the data collected did not include the number of active jobs it is not possible to determine from the data whether BBN had more users or just more demanding users.

The data presented on the graph is available as a side effect of the RSEXEC system. The server programs for the RSEXEC system (RSSER programs) communicate regularly with one another exchanging status information. The RSSER program at each site maintains a (dynamic) data base of the information it collects from the RSSER programs at other sites. The NETLOAD command of the TENEX EXEC, as well as many RSEXEC commands, makes use of information in that data base.

The raw data for BBN and ISI* load curves (as well as data for the other TENEX sites that run RSSER) was collected by a program which creates daily load information files by periodically (every 3 minutes) reading load average data from the data base maintained by RSSER. The monthly summary was produced by a program that analyzes daily data files.

What effect did ISI going down 11 PM → 8 AM EDT several nights a week have on the above?

- - - - - - - - - - - - -

* The data for BBN and ISI was chosen for presentation in this RFC because the BBN and ISI TENEXs are two of the major time-sharing service hosts on the network.

WEEKDAY HOURLY LOAD AVERAGES
July 1973